

**FIVE-YEAR REVIEW REPORT**  
**KATONAH MUNICIPAL WELL FIELD SITE**  
**VILLAGE OF KATONAH, TOWN OF BEDFORD**  
**WESTCHESTER COUNTY, NEW YORK**



**Prepared by**  
**U.S. Environmental Protection Agency**

**September 2007**

## **EXECUTIVE SUMMARY**

This is the third five-year review for the Katonah Municipal Well (KMW) site (Site), located in the Village of Katonah in the Town of Bedford, Westchester County, New York, and is situated on land owned by the City of New York. The remedy for the Site is groundwater containment and treatment, using a 370 gallons per minute (gpm) production well, fitted with an air stripper and a disinfection unit. Monitoring of the treated water is performed to detect the presence of contaminants and to determine the level of aquifer restoration achieved.

Based upon a review of the Record of Decision, the remedial action report, the operations, maintenance and monitoring reports, the Close-Out Reports and a recent Site inspection, the U.S. Environmental Protection Agency (EPA) concludes that the remedy implemented at the Site is functioning as intended by the decision documents and protects human health and the environment.

## Five-Year Review Summary Form

### SITE IDENTIFICATION

Site name (from WasteLAN): Katonah Municipal Well

EPA ID (from WasteLAN): NYD980780795

Region: 2

State: NY

City/County: Town of Bedford/Westchester

### SITE STATUS

NPL status:  Final  Deleted  Other (specify) \_\_\_\_\_

Remediation status (choose all that apply):  Under Construction  Constructed  Operating

Multiple OUs?\*  YES  NO

Construction completion date: 07/07/1992

Has site been put into reuse?  YES  NO  N/A (site involves groundwater plume and not real property)

### REVIEW STATUS

Lead agency:  EPA  State  Tribe  Other Federal Agency \_\_\_\_\_

Author name: Damian Duda

Author title: Remedial Project Manager

Author affiliation: EPA

Review period:\*\* 09/30/2002 to 07/31/2007

Date(s) of site inspection: 4/23/2007

Type of review:  Post-SARA  Pre-SARA  NPL-Removal only  
 Non-NPL Remedial Action Site  NPL State/Tribe-lead  
 Regional Discretion

Review number:  1 (first)  2 (second)  3 (third)  Other (specify) \_\_\_\_\_

#### Triggering action:

Actual RA Onsite Construction at OU # \_\_\_\_\_  Actual RA Start at OU# \_\_\_\_\_  
 Construction Completion  Previous Five-Year Review Report  
 Other (specify) \_\_\_\_\_

Triggering action date (from WasteLAN): 09/30/1997

Is the site protective of public health?  yes  no  not yet determined

Does the report include recommendation(s) and follow-up action(s)?  yes  no  not yet determined

Is human exposure under control?  yes  no  not yet determined

Is contaminated groundwater under control?  yes  no  not yet determined

Is the remedy protective of the environment?  yes  no  not yet determined

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

## **Five-Year Review Summary Form** (continued)

### **Issues, Recommendations and Follow-Up Actions**

The remedy has been implemented and is functioning as intended by the Katonah Municipal Well site's decision documents. There are ongoing operations, maintenance and monitoring activities that are part of the selected remedy. As anticipated by the decision documents, these activities are subject to routine modification and adjustment. This report includes suggestions for improving, modifying and/or adjusting these activities (see Table 4). There are no issues nor recommendations identified in this review which are necessary for the protection of public health and the environment.

### **Protectiveness Statement**

The implemented actions taken at the Katonah Municipal Well site protect human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the engineering controls selected in the decision documents continue to be properly operated, monitored and maintained.

**ACRONYMS USED IN THIS DOCUMENT**

AOC	Administrative Order on Consent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
gpm	Gallons per minute
KMW	Katonah Municipal Well
MCL	Maximum contaminant level
µg/l	Micrograms per liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operations and Maintenance
PCE	Tetrachloroethene
PRP	Potentially Responsible Party
ROD	Record of Decision
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
UAO	Unilateral Administrative Order
VOC	Volatile organic compound
WCDOH	Westchester County Department of Health

## TABLE OF CONTENTS

I.	<u>INTRODUCTION</u> .....	1
II.	<u>SITE CHRONOLOGY</u> .....	2
III.	<u>BACKGROUND</u> .....	2
	Site Location and Physical Descriptions .....	2
	Geology/Hydrogeology .....	3
	Land and Resource Use .....	3
	History of Contamination .....	3
	Initial Response .....	3
	Basis for Taking Action .....	4
IV.	<u>REMEDIAL ACTIONS</u> .....	4
	Remedy Selection .....	4
	Remedy Implementation .....	4
	Institutional Controls .....	5
	Operations and Maintenance .....	5
V.	<u>PROGRESS SINCE LAST FIVE-YEAR REVIEW</u> .....	6
VI.	<u>FIVE-YEAR REVIEW PROCESS</u> .....	6
	Five-Year Review Team .....	6
	Community Notification and Involvement .....	6
	Document Review .....	6
	Data Review .....	7
	Site Inspection and Interviews .....	7
VII.	<u>TECHNICAL ASSESSMENT</u> .....	8
	Question A: Is the remedy functioning as intended by the decision documents? .....	8
	Plume Containment .....	8
	Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy still valid? .....	8
	Human Health .....	8
	Ecological .....	9
	Question C: Has any other information come to light that could call into question the protectiveness of the remedy? .....	10
VIII.	<u>ISSUES, RECOMMENDATIONS AND FOLLOW-UP ACTIONS</u> .....	10
IX.	<u>PROTECTIVENESS STATEMENT</u> .....	10
X.	<u>NEXT FIVE-YEAR REVIEW</u> .....	10

Appendices: TABLES

U.S. Environmental Protection Agency  
Region II  
Emergency and Remedial Response Division  
Five-Year Review (Type I)

Katonah Municipal Well Superfund Site  
Village of Katonah, Town of Bedford, Westchester County, New York

**I. INTRODUCTION**

This is the third five-year review for the Katonah Municipal Well (KMW) site (Site), located in the Village of Katonah, Town of Bedford, Westchester County, New York. The selected remedy for the Site consisted of 1) groundwater containment and treatment with a new production well fitted with a treatment system which includes an air stripper and a disinfection unit and 2) monitoring the resulting treated water to detect the presence of identified contaminants.

This review was conducted by Damian Duda, the U.S. Environmental Protection Agency (EPA) Region II Remedial Project Manager (RPM) for the Site, pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §§9601 *et seq.* and 40 CFR 300.403(f)(4)(ii). The five-year review was completed, in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directives 9355.7-02B-P (June 2001). The purpose of a five-year review is to ensure that the implemented remedies protect human health and the environment and that they function as intended by the Site decision documents. This report will become part of the Site file.

A five-year review is required at this Site because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. This review covers the period from September 2002 to July 2007. The trigger for this five-year review is the date of the last five-year review.

The lead agency for the Site is EPA Region II. On January 19, 2000, the Site was deleted from the National Priorities List (NPL).

## II. SITE CHRONOLOGY

<b>Table 1: Chronology of Site Events</b>	
<b>Event</b>	<b>Date</b>
Volatile organic compounds (VOCs) detected in Katonah Municipal Well	1978
Site placed on National Priorities List	1986
Record of Decision	1987
Administrative Order on Consent for Remedial Design	1988
Unilateral Administrative Order for Remedial Design	1988
Remedial Design completed	1990
Consent Decree issued for Remedial Action	1990
Construction completed	1992
Preliminary Close-Out Report	1992
Remedial Action Report	1993
First Five-Year Review Report	1997
Close-Out Report	1999
NPL deletion	2000
Second Five-Year Review Report	2002

## III. BACKGROUND

### *Site Location and Physical Descriptions*

The Site is located in the Village of Katonah in the Town of Bedford, Westchester County, New York on land owned by the City of New York (NYC). The Site is situated in the eastern part of the Village, on a narrow peninsula extending eastward into the Muscoot Reservoir, which supplies drinking water to NYC as part of the Croton Reservoir System.

### *Geology/Hydrogeology*

The peninsula rises approximately 10 feet above the normal level of the reservoir. The direction of the groundwater flow in the unconfined glacial stratified drift aquifer in which the well is located is generally east-northeast.

### *Land and Resource Use*

The Village of Katonah is the residential community located near the Site and is moderately populated.

The KMW is part of the Bedford Water and Storage Distribution District and was designed in the early part of the 20<sup>th</sup> century as an infiltration gallery, drawing water primarily from the reservoir, with some contribution from the aquifer underlying the Village. The former production well operated at an average pumping rate of 240 gallons per minute (gpm) before it was shut down in 1978. It had provided over sixty percent of the water supply for 6,200 people in the Village of Katonah and Village of Bedford Hills.

### *History of Contamination*

During the Fall of 1978, the Westchester County Department of Health (WCDOH) sampled the water quality of several Westchester municipalities. This action followed the discovery of volatile organic compound (VOC) contamination of the well supplying drinking water to the Village of Brewster, New York. The two initial rounds of sampling in 1978 showed tetrachloroethene (PCE) concentrations of 75 and 90 micrograms per liter ( $\mu\text{g/l}$ ). The New York State Department of Health guidelines at the time had a limit of 50  $\mu\text{g/l}$  for any single synthetic organic compound.

The Site was referred to the New York State Department of Environmental Conservation (NYSDEC) for a preliminary assessment and site investigation.

### *Initial Response*

The former production well was taken out of service in December 1978. At that time, the Town of Bedford temporarily interconnected with the Bedford Correctional Facility Water System to restore water to 6200 people dependent on the former production well.

The Site was proposed for inclusion on the National Priorities List (NPL) on October 1, 1984 and was listed on the NPL on June 1, 1986.

### *Basis for Taking Action*

From June 1985 until July 1987, CDM, Inc. and CDM Federal Programs Corporation (CDM Federal), under contract to EPA, conducted a fund-lead remedial investigation and feasibility study (RI/FS) at the Site.

The purpose of the RI/FS was to determine the nature and extent of contamination at the Site; to determine what threat the Site posed to public health and the environment; and, to evaluate remedial alternatives. During the course of the RI, other potential sources of contamination were identified and investigated. It had been reported that PCE, used for cleaning mechanical equipment and parts, was disposed of in the pumphouse floor drain. Soil collected from a sump inside the pumphouse adjacent to the original KMW showed contaminants of concern. In addition, the area surrounding the well and pumphouse had been historically used for the disposal of street cleaning debris. The RI showed that, when the original KMW was pumping, groundwater flow from the peninsula area was intercepted by the well and contamination did not discharge into the reservoir. The RI/FS indicated that PCE was the only contaminant of concern in the groundwater and that there were no concerns regarding contamination of surface water, wetlands or soils.

## **IV. REMEDIAL ACTIONS**

### *Remedy Selection*

The Record of Decision (ROD) was issued on September 25, 1987. The selected remedial action (RA) consisted of: 1) constructing a new 370 gpm production well fitted with an air stripper and a disinfection unit; 2) controlling contaminant migration through pumping the production well and treating extracted groundwater; 3) filling and sealing the former production well to prevent the further migration of contaminants into the aquifer; 4) monitoring treated water to detect the presence of identified contaminants; and, 5) general cleanup of the peninsula area to remove construction debris. This remedy is considered a groundwater containment remedy with aquifer restoration the ultimate result of all primary objectives functioning as intended in the long term.

### *Remedy Implementation*

The potentially responsible parties (PRPs) were identified as the Town of Bedford, three dry-cleaning establishments and the KMW property owner. The City of New York owns the KMW property; the Town of Bedford owns the KMW and its appurtenances. On June 17, 1988, EPA issued an Administrative Order on Consent (AOC) for the remedial design (RD) to the Town of Bedford. The remaining PRPs declined to sign the Consent Order. On September 9, 1988, EPA issued a Unilateral Administrative Order (UAO) to the nonconsenting PRPs to assist the Town of Bedford in the completion of the RD. The RD was completed in March 1990. The

nonconsenting PRPs did not comply with this UAO and later reimbursed their portion of the response costs in a Consent Decree entered on March 18, 1993.

Construction occurred from 1991 to 1992. Construction of the new well was completed in August 1991, and the old well was backfilled to grade with native material. In February 1992, the air stripper was installed. In April 1992, the pumphouse was constructed, all instrumentation and control panels were installed and general cleanup activities on the peninsula were completed. In a letter dated May 26, 1992, James J. Hahn Engineering (Hahn Engineering), the Town of Bedford's contractor, provided certification that the construction was substantially complete and complied with approved plans and specifications.

A pre-final inspection was conducted on April 27, 1992. Parties present included representatives from EPA, NYSDEC, the Town of Bedford and CDM Federal, EPA's oversight contractor. The pre-final inspection included a Site walk-through and a demonstration by the instrumentation manufacturer. The final inspection of the groundwater treatment system was performed on June 23, 1992, by representatives of the EPA, CDM-Federal, EPA's oversight contractor, NYSDEC, WCDOH, the Town of Bedford and Hahn Engineering. Hahn Engineering confirmed that all outstanding items had been corrected or were being addressed by the subcontractors. On July 7, 1992, the EPA issued a Preliminary Close-Out Report. On March 31, 1993, EPA approved the RA Report signifying that the system was operational and functional.

#### *Institutional Controls*

The 1987 ROD and the 1988 Consent Decree did not call for the placement of institutional controls. The Region believes that the actions identified in the ROD are adequate to address the current groundwater use, as well as the reasonably anticipated future groundwater use. Those actions have been implemented and appear to remain adequate. In addition, there are extra layers of protection provided by local government agencies. NYC owns the Site property and has programs protecting its water supply reservoirs and systems. The Town of Bedford owns and operates the KMW. This water supply source is regulated by both the NYS and Westchester County health departments. Lastly, any well drilling in the area is governed by the Westchester County Sanitary Code: Article VII, Water Supplies, Sec. 873.700, which states that "any new well construction must be permitted."

#### *Operations and Maintenance*

The Town of Bedford operates and maintains the KMW and its associated treatment system, as part of the Bedford Water and Storage Distribution District. Hahn Engineering, through its subcontractor, Environmental Planning & Management, Inc., samples the groundwater on a quarterly basis at the KMW influent, effluent and distribution system locations. Two monitoring wells, W-4 (upgradient) and W-11 (downgradient), are sampled twice a year. All sampling is conducted in accordance with an approved Project Operations Plan.

The annual budget for the Town of Bedford water supply is \$300,000 per year; the annual O&M costs for the KMW are approximately 80%, or \$240,000 per year.

## V. PROGRESS SINCE LAST FIVE-YEAR REVIEW

The second five-year review concluded that the remedy at the Site was implemented, in accordance with the requirements of the ROD, and is protective of human health and the environment.

The O&M sampling and inspection were conducted according to the O&M schedule. The quarterly O&M reports were transmitted to EPA during the period since the last review. In the last review, there was a recommendation that unused monitoring wells be considered for decommissioning. This recommendation is further addressed in Table 4.

The KMW has operated as expected over the last five years. Recently, however, concentrations of nitrates and magnesium has been increasing in the pumped raw water. The current KMW treatment system is being taxed to address the increased presence of nitrates and magnesium.

## VI. FIVE-YEAR REVIEW PROCESS

### *Five-Year Review Team*

The EPA five-year review team consisted of Damian Duda, Rob Alvey, Carol Berns, Angela Carpenter and Chuck Nace.

### *Community Notification and Involvement*

The EPA Community Relations Coordinator for the Site, Cecilia Echols, published a notice on July 7, 2007 in the *Journal News*, a local newspaper, notifying the community of the initiation of this five-year review process. The notice indicated that EPA would be conducting a five-year review of the remedy for the Site to ensure that the implemented remedy remains protective of public health and the environment and is functioning as designed. It was also indicated that once the five-year review is completed, the results will be made available in the local Site repository. In addition, the notice included the RPM's contact information for questions related to the five-year review process or the Site. There were no comments received from the public or from stakeholders during this review.

### *Document Review*

Table 2, at the conclusion of this report, provides a list of all documents that were reviewed to prepare this report.

### *Data Review*

KMW samples are taken quarterly at three locations in the water treatment scheme: 1) raw water, 2) treated water and 3) distribution water. The Quarterly Sampling reports show that the current levels of the contaminant of concern, PCE, have consistently remained in the 20-30 µg/l range in the raw water and have been stable over the last five years. Table 3 shows the PCE data levels collected from December 2002 through March 2007. The sampling results of the treated water and the distribution water show the treatment facility is operating as designed: concentrations of PCE were measured at nondetectable levels, below the target treatment level of 1 µg/l, as mandated by the ROD. Two monitoring wells, W-4 (upgradient) and W-11 (downgradient), are sampled biannually; this monitoring frequency is appropriate for the selected remedy. The data for these wells are reported in the Quarterly Sampling reports. It is important to note that the sampling results for PCE for both of these wells are minimal and significantly below the influent levels.

### *Site Inspection and Interviews*

A Site visit and inspection was conducted on Wednesday, May 16, 2007. Specifically, the KMW pump house and the air stripper were inspected. A walk-through inspection was completed in the area immediately surrounding the Site. Various monitoring wells, including MW-4 and MW-11, which are part of the O&M sampling plan, were located and inspected.

The Site inspection was attended by Damian Duda, Rob Alvey and Chuck Nace from EPA, Jim Hahn from Hahn Engineering, Bill Nickson from the Town of Bedford, Carl Hoffman and Jerry Rider from NYSDEC and Louise Doyle from WCDOH. No operating anomalies were identified. Mr. Nickson indicated that the KMW is currently pumping around 370 gpm, which is the design capacity of the well. The KMW operates anywhere from 14 to 19 hours per day, depending on the time of year and public demand.

Based on interviews with Mr. Nickson and Mr. Hahn, there is a marked increase in concentration of nitrates, magnesium and chlorides in the raw water to the KMW, which may require treatment in the future. This contamination is presumably due to the increasing population and use of cesspools in the area and would not be considered Site-related. The current VOC treatment is inexpensive to operate, but the addition of a separate treatment system for nitrates would make it more costly. As a response to the expense of treating this additional contamination, the Town of Bedford Water District is considering an alternate water supply source. The Town of Bedford has submitted an application to the NYC Department of Environmental Protection (DEP) for review and approval of a micro-filtration pilot study to use water from the NYC water supply system, namely the NYC Aqueduct. Approval of this project is pending. If the NYCDEP approves the connection to the Aqueduct, then the Town of Bedford would want to shut down the KMW as a public water supply source. The inspection team discussed potential actions that EPA and NYSDEC may need to consider if the KMW was no longer needed as a source of

public water. If the KMW system is removed from service, the agencies will evaluate the Town of Bedford's decision and determine an appropriate response.

The inspection team also performed a reconnaissance of the monitoring wells in the vicinity of the KMW pump station. Some were found to be in poor condition, and at least one could not be located. Protective covers for surface casings were missing or had been hit by cars. EPA feels that MW-11, in particular, is compromised as a viable sampling location and is in need of repair and maintenance.

## VII. TECHNICAL ASSESSMENT

*Question A: Is the remedy functioning as intended by the decision documents?*

### Plume Containment

The 1987 ROD called for the installation of a new production well with an air stripper and disinfection. The contaminated groundwater is contained within an unconfined aquifer of glacial stratified drift (sand and gravels) which overlay gneiss. The contaminants do not impact the underlying bedrock, and there are no private residential wells downgradient of the Site.

The ongoing operation of the KMW air stripper system continues to provide a safe and reliable water supply. The system is properly operated and has no history of noncompliance. The data collected from the upgradient and downgradient monitoring wells indicate that contaminated groundwater releases of PCE are under control.

*Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy still valid?*

### Human Health

The exposure assumptions and toxicity data used to estimate the potential risks and hazards to human health followed the standard risk assessment paradigm in use at the time. Although specific values for exposure parameters and toxicity data may have changed since the completion of the risk assessment, the process is still valid. The cleanup level used for PCE, the only chemical of concern identified in the groundwater, is slightly lower than the values used today. When the ROD was signed in 1987, there were no Federal or state drinking water standards for PCE; therefore, a health-based number was selected. However, the health-based value (0.8 µg/l) was below the analytical capabilities, and, as a result, the cleanup value was increased to 1 µg/l. Currently, the Federal and state drinking water value for PCE is 5 µg/l. Hence, the current applicable or relevant and appropriate requirement (ARAR) for PCE today would be 5 µg/l. The remedial action objectives presented in the ROD are all still valid.

Vapor intrusion was not evaluated in the 1987 ROD. Since this Site consists of a VOC-contaminated groundwater plume, an assessment was made to determine if vapor intrusion is a potential issue for this Site. The assessment was consistent with the flowchart found in the 2002 USEPA Vapor Intrusion Guidance. The groundwater at the Site is located less than 100 feet below the ground surface, and there are buildings within 100 feet of the groundwater plume so the determination was made, based on the flowchart, to screen the groundwater data against the values presented in Table 2c<sup>1</sup> of the above-referenced guidance. The most recent groundwater data from the December 2006 quarterly monitoring report was used for this evaluation. Other than PCE, there were two other VOCs detected in the KMW raw water: cis-1,2-dichloroethene and trichloroethene (TCE). Overall, two compounds showed concentrations that exceed groundwater screening values (PCE and TCE). Only PCE is considered a Site-related contaminant. Pursuant to the above-referenced guidance, if the detected groundwater concentrations do not exceed the screening value by more than 50 times, the likelihood of vapors intruding into buildings is low. At the KMW raw water sampling point, the highest detected concentration of PCE was 22 µg/l, which is only 24 times its screening value; and, the highest detected concentration of TCE was 0.5 µg/l, which is 100 times its screening value. However, over the last five years, PCE concentrations in monitoring well W-4 and monitoring well W-11 range from non-detect to 1.1 µg/l, and TCE has been detected twice at low levels in monitoring well W-4 only. Accordingly, it appears that any VOC levels of concerns with respect to vapor intrusion are very localized at or near the KMW. The only building located there is the KMW operations building which has no full time personnel. Thus, after evaluating the PCE and TCE data over the last five years from the two monitoring wells, EPA has determined that vapor intrusion is not likely to be an important transport mechanism for VOCs at the Site. Similar vapor intrusion findings were identified in the 2002 Five-Year Review. EPA recommends to continue the groundwater monitoring. If PCE and TCE concentrations exceed the levels of concern in both the select monitoring wells, EPA will reevaluate the vapor intrusion pathway.

### Ecological

The 1987 ROD indicates that there were no adverse ecological impacts due to Site-related contaminants. This was based on the conclusion that the supply well draws water from the nearby reservoir, which inhibits contaminated groundwater from discharging to surface water, resulting in no current exposures to ecological receptors. The evaluation that was referenced in the 1987 ROD is still valid. In addition, the cleanup values and remedial objectives, as they pertain to ecological risk, are still valid.

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<sup>1</sup>Table 2c contains several screening values that are based upon the maximum contaminant level (MCL), however for this assessment the MCL screening value was replaced with a more sensitive health-based value set at a cancer risk of 10<sup>-6</sup> or a hazard index of 1.

*Question C: Has any other information come to light that could call into question the protectiveness of the remedy?*

No other information has come to light that could call into question the protectiveness of the remedy.

### **VIII. ISSUES, RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

The remedy has been implemented and is functioning as intended by the Site's decision documents. There are ongoing operation, maintenance and monitoring activities that are part of the selected remedy. As anticipated by the decision documents, these activities are subject to routine modification and adjustment. This report includes suggestions for improving, modifying and/or adjusting these activities (see Table 4). There are no issues or recommendations identified in this review which are necessary for the protection of human health and the environment.

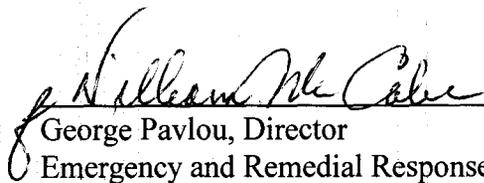
### **IX. PROTECTIVENESS STATEMENT**

The groundwater extraction and treatment systems are intact and protect the public health by providing a safe drinking water supply. The implemented actions taken at the Site protect human health and the environment. There are no exposure pathways that could result in unacceptable risks, and none are expected as long as the engineered controls selected in the Site decision documents continue to be properly operated, monitored and maintained.

### **X. NEXT FIVE-YEAR REVIEW**

In accordance with 40 CFR 300.430 (f) (4) (ii), the lead agency shall review the remedial action for a Superfund site no less than every five years. Since hazardous substances, pollutants or contaminants remain at the Site, which do not allow for unlimited use or unrestricted exposure, EPA will conduct another five-year review before September 2012.

Approved:

  
George Pavlou, Director  
Emergency and Remedial Response Division

9-25-07  
Date

**TABLE 2**

**Documents Reviewed for Five-Year Review**

<u>Remedial Investigation Report</u> , C.M., Federal Programs Corporation, Volumes I - III, July 15, 1987.
<u>Draft Feasibility Study Report</u> , C.M. Federal Programs Corporation, July 15, 1987.
<u>Record of Decision</u> , EPA, September 25, 1987.
<u>Draft Project Operations Plan</u> , Hahn Engineering, June 1988.
<u>Administrative Order on Consent</u> , EPA, Index Number II CERCLA-80209, June 10, 1988.
<u>Administrative Order</u> , EPA, September 9, 1988.
<u>Revised Remedial Design Work Plan</u> , Hahn Engineering, October 1988.
<u>Consent Decree</u> , EPA, July 7, 1989.
<u>Project Management Plan and Remedial Design Report</u> , Hahn Engineering, March 22, 1990.
<u>Operations and Maintenance Manual</u> , Hahn Engineering, June 1992.
<u>Superfund Preliminary Site Close-Out Report</u> , EPA, July 7, 1992.
<u>Remedial Action Report</u> , EPA, March 31, 1993.
<u>Five-Year Review Reports</u> , EPA, September 1997 and September 2002.
<u>Quarterly Water Quality Monitoring Reports</u> , Environmental Planning Management, Inc., December 2002 through March 2007.

**TABLE 3****PCE Concentrations ( $\mu\text{g/l}$ ) at the Katonah Municipal Well and at Monitoring Wells  
From December 2002 through March 2007****[Federal MCL and New York State GWQS - 5  $\mu\text{g/l}$ ]**

	<i>Raw Water</i>	<i>Treated Water</i>	<i>Distribution Water</i>	<i>Monitoring Well W-4 (UG)</i>	<i>Monitoring Well W-11 (DG)</i>
<i>December 2002</i>	26	UJ	UJ	NS	NS
<i>March 2003</i>	27	U	U	1.1	U
<i>June 2003</i>	33	U	U	NS	NS
<i>October 2003</i>	35	U	U	0.6	U
<i>December 2003</i>	27	U	U	NS	NS
<i>March 2004</i>	29 B	UB	UB	0.3 JB	UB
<i>June 2004</i>	33	U	U	NS	NS
<i>February 2005</i>	18 J	U	U	NS	NS
<i>April 2005</i>	17	U	U	U	U
<i>July 2005</i>	43	U	U	NS	NS
<i>October 2005</i>	19 J	0.3 J	U	U	0.4 J
<i>December 2005</i>	30 J	U	U	NS	NS
<i>March 2006</i>	22	U	U	0.5 J	0.3 J
<i>June 2006</i>	20 J	U	U	NS	NS
<i>September 2006</i>	24 J	UJ	UJ	UJ	0.3 J
<i>December 2006</i>	22 J	UJ	UJ	NS	NS
<i>March 2007</i>	18 J	UJ	UJ	0.2 J	0.4 J

 $\mu\text{g/l}$  - micrograms per liter (parts per billion)

U - Non-detect

NS - Not sampled

UG - Upgradient

DG - Downgradient

J - Estimated value

B - Detected in the Field Blank

**TABLE 4: Issues, Recommendations and Follow-Up Actions**

Issue	Recommendations and Follow-Up Actions	Party Responsible	Over-sight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Monitoring well MW-11's location is unsecured in the middle of a sidewalk. The well is also significantly damaged.	EPA recommends that MW-11 be eliminated from the monitoring program and formally abandoned. EPA recommends that a nearby location be considered to install a replacement monitoring well.	PRP	EPA	6/08	N	N
The entire network of existing monitoring wells is undocumented. One well could not be found at the recent KMW site inspection.	EPA recommends the following: 1) a formal inspection be made of the entire network; 2) an accurate map be created to delineate fully the existing monitoring wells; 3) repairs or abandonment be considered for some wells; 4) the monitoring well network be resurveyed, redeveloped and sampled; 5) an additional monitoring well be installed immediately hydraulically downgradient of the estimated limit of the PCE impacted area. This well could function as an outpost monitoring well for potential Monitored Natural Attenuation if the KMW supply well is removed from service; and, 6) any monitoring wells that remain or are newly installed should be filed with the NYSDEC to obtain formal identification numbers.	PRP	EPA	9/08	N	N
The existing data and monitoring well configuration does not provide a good assessment of the existing PCE plume.	EPA suggests that direct push drilling technology be used to delineate the current configuration of the plume.	PRP	EPA	4/09	N	N